REMARKS

Claims 8 and 10-12 are pending in this application. By this Amendment, claims 8, 10 and 11 are amended and claims 13-16 are canceled. Support for the amendments to the claims may be found, for example, in the claims as filed and in the instant specification at paragraph [0008]. No new matter is added.

In view of the foregoing amendments, following remarks, and the evidence provided in the attached Declaration Under 37 C.F.R. §1.132, reconsideration and allowance are respectfully requested.

Entry of the amendments is proper under 37 CFR §1.116 because the amendments: (a) place the application in condition for allowance for the reasons discussed herein; (b) do not raise any new issue requiring further search and/or consideration as the amendments amplify issues previously discussed throughout prosecution; (c) do not present any additional claims without canceling a corresponding number of finally rejected claims; and (d) place the application in better form for appeal, should an appeal be necessary. The amendments are necessary and were not earlier presented because they are made in response to arguments raised in the final rejection. Entry of the amendments is thus respectfully requested.

I. Claim Rejection Under 35 U.S.C. §103

The Office Action rejects claims 8, 10-13 and 16 under 35 U.S.C. §103(a) over WO 03/091180 to Yuasa et al. ("Yuasa"). By this Amendment, claims 13 and 16 are canceled, thus the rejection is moot as to those claims. As to the remaining claims, Applicants respectfully traverse the rejection.

By this Amendment, claim 8 is amended to recite, *inter alia*, "a cement dispersant for ultrahigh performance concrete comprising ... at least one compound (compound A) ... at least one compound (compound B) represented by general formula (1) ... at least one compound (compound C) represented by general formula (2) ... at least one compound (compound D)

represented by general formula (3) ... wherein, when the total of the compounds A to D is set to be 100 percent by weight, the water-soluble amphoteric copolymer is obtained by copolymerizing 5 to 25 percent by weight of the compound A, 5 to 30 percent by weight of the compound B, 5 to 40 percent by weight of the compound C, and 20 to 80 percent by weight of the compound D ...." Applicants respectfully assert that Yuasa does not disclose and would not have rendered obvious at least the above features of claim 8.

The Office Action asserts that Yuasa discloses all of the features of the claimed compounds A-D. Additionally, the Office Action asserts that, regarding compounds C and D, Yuasa discloses that it is possible to combine a monomer of Yuasa formula (3) having an average molar number in the range of 40 to 300 with the monomer of formula (3) having an average molar number in the range of 2 to 40. Further, the Office Action, on page 3, acknowledges that Yuasa fails to disclose the claimed mixing ratio of the claimed compounds A-D, but asserts that it would have been obvious to one of ordinary skill in the art to have optimized the mixing ratio of the monomers disclosed in Yuasa to enhance the water reducing capability of the concrete mixture and obtain an adequate viscosity. Applicants respectfully disagree.

By this Amendment, claim 8 is directed to ultrahigh performance concrete, which Applicants respectfully submit is known in the art to be ultrahigh strength concrete. For example, the specification recites that ultrahigh performance concrete represents a well-conditioned concrete obtained at a low water to concrete ratio (W/C). See specification, paragraph [0008] (referred to in the specification as W/B). Further, the Yuasa reference acknowledges that ultrahigh strength concrete is concrete with a low W/C. See Yuasa, page 83, lines 24-30.

Accordingly, ultrahigh strength, or ultrahigh performance, concrete has properties that are significantly different than conventional concrete. In ultrahigh strength, or ultrahigh

performance, concrete the water/cement ratio is lessened and, thus, the amount of cement in the concrete composition increases. This increased cement composition leads to an increase of heat generation in the concrete member unit, and the heat generation develops cracks in the hardened concrete structural body. The increase of the amount of cement in the concrete composition also leads to a rapid increase in viscosity, which lowers the workability at the time of setting the concrete.

In ultrahigh strength, or ultrahigh performance, concrete, low-heat cement or moderate-heat cement, which have a heat generation amount that is lower than that of conventionally used ordinary Portland cement (OPC), is used and, in addition, Silica fume cement and the like are used to improve fluidity. See specification, page 45, Table 9. Silica fume cement is ultrafine particle containing SiO_2 as a main ingredient, and when Silica fume cement is used in manufacturing ultrahigh strength, or ultrahigh performance, concrete, cement compositions with lower viscosity than the usually used OPC are obtained.

For all of the reasons stated above, a cement dispersant will have significantly different effects when used with conventional concrete as compared to its use with ultrahigh strength, or ultrahigh performance, concrete. Although Yuasa may disclose in passing that its cement dispersant may be used with ultrahigh strength concrete in only a single, short paragraph that discloses that its dispersant may be used in ultrahigh strength concrete, Yuasa does not provide any specific example or detailed discussion of the effects of the dispersant disclosed therein in ultrahigh strength concrete. See Yuasa, page 83, lines 15-18. The examples of Yuasa are conducted with a W/C ratio of 35% and 45%. See Yuasa, page 93. However, ultrahigh strength, or ultrahigh performance, concrete is generally considered to have a W/C ratio that is equal to 20% or less, and Yuasa does not disclose any data indicating that its dispersant was tested or could even be suitably used in ultrahigh strength, or ultrahigh performance, concrete or that its dispersant has the desired effect when it is used with

ultrahigh strength, or ultrahigh performance, concrete. See Yuasa, page 83, lines 30-34 and Examples. Further, as is acknowledged by the Office Action, Yuasa does not disclose a ratio for the components of the dispersant.

Applicants respectfully assert that, as is supported by the evidence provided in the examples of the specification and in the attached Declaration Under 37 C.F.R. §1.132, the precisely claimed ratio of the claimed compounds A-D provide superior performance when used with ultrahigh strength, or ultrahigh performance, concrete.

As shown in Table I of the attached Declaration, Example 11 is provided with ratios of compound A-D within the ranges recited in claim 8. However, Comparative Examples 10, 11, 12 and 14 in the Declaration are dispersants without one of compound A-D, and Comparative Examples 13 and 15 in the Declaration provide examples where compound A is above the maximum value of the claimed range and compound B is above the maximum value in the claimed range, respectively. As can be seen in Table II of the Declaration, the mortar flow value was measured after one minute and after three minutes for ultrahigh strength, or ultrahigh performance, concrete where the W/C ratio is equal to 12%. As Table II of the Declaration shows, the mortar flow value after both one minute and three minutes of Example 11 is significantly superior to any of Comparative Examples 10-15. Particularly, Comparative Example 13 and Comparative Example 15, performed significantly worse than Example 11 and the other comparative examples where mortar was formed. Therefore, Table II of the attached Declaration shows that the claimed ranges of compounds A-D are essential for providing ultrahigh strength, or ultrahigh performance, concrete with improved mortar flow.

Further, Comparative Test Example 2 in the Declaration conducts a mortar flow test where the W/C ratio is equal to 20%. In Comparative Test Example 2, mortar flow was tested immediately after the formation of the mortar paste and thirty minutes after the

formation of the mortar paste. Table III in the Declaration shows that Examples 3-5, all of which have amounts of compounds A-D within the claimed ranges, have superior mortar flows, especially thirty minutes after formation of the mortar paste, than the Comparative Examples 10-15. Particularly, as was the case in Comparative Test 1, Comparative Examples 13 and 15 had the poorest viscosity of all of the examples where mortar was formed.

Finally, in Comparative Test Example 3, a concrete test was conducted using Example 11 and Comparative Examples 10 and 12. As can be seen in Table V of the Declaration, the copolymer of Example 11 showed excellent fluidity in an ultrahigh strength, or ultrahigh performance, concrete. However, the copolymer of Comparative Example 10, in which compound D was excluded, and the copolymer in Comparative Example 12, in which compound A was excluded, had inferior fluidity and slump flow. Additionally, Comparative Examples 10 and 12 had inferior compression strength and increased amount of air.

As the evidence in the Declaration shows, a copolymer dispersant with the specifically claimed ratios of compounds A-D provides superior properties in ultrahigh strength, or ultrahigh performance, concrete when compared to copolymer dispersants that either exclude one of compounds A-D or have at least one compound outside of the claimed ranges. The evidence thus establishes unexpected results over the broad and specific disclosures of Yuasa.

As acknowledged by the Office Action, Yuasa fails to disclose a copolymer dispersant with specific ratios of the compounds to be used therein, and Yuasa provides no reason or rationale for one of ordinary skill in the art to have expected that the results indicated in Yuasa can or should be improved by adjusting the ratio of compounds A-D. Additionally, Yuasa does not provide any example where the dispersant disclosed therein is used in ultrahigh strength, or ultrahigh performance, concrete. Thus, Applicants respectfully assert that Yuasa also fails to provide any reason or rationale for one of ordinary skill in the art to have expected that a dispersant with the specifically claimed ratios of the specific compounds

A-D would provide superior results in ultrahigh strength, or ultrahigh performance, concrete when compared to dispersants with ratios of compounds A-D that are just outside the claimed ranges, or wherein at least one of compounds A-D is not included. Therefore, Yuasa would not have rendered obvious a cement dispersant for ultrahigh performance concrete wherein specifically claimed compounds A-D are present in amounts of 5 to 25 percent by weight of compound A, 5 to 30 percent by weight of compound B, 5 to 40 percent by weight of compound C, and 20 to 80 percent by weight of compound D as recited in claim 8.

For at least the reasons stated above, as well as in light of the additional evidence provided in the attached Declaration Under 37 C.F.R. §1.132, claim 8 would not have been rendered obvious by Yuasa. Claims 10-12 depend from claim 8 and, thus, also would not have been rendered obvious by Yuasa.

II. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the application are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,

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JAO:NAB/kjl

Attachments:
Petition for Extension of Time
Declaration Under 37 C.F.R. §1.132

Date: March 9, 2009

DEPOSIT ACCOUNT USE AUTHORIZATION
Please grant any extension necessary for entry;
Charge any fee due to our Deposit Account No. 15-0461

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